

## IN THE CLAIMS

Please cancel claims 10 and 11 without prejudice and amend the claims as follows:

1. (currently amended) A method for producing a quartz glass jig, said method comprising: processing a quartz glass raw material into a desired shape by a treatment including fire working, annealing the quartz glass jig so as to remove stress therein, and cleaning treatment to obtain a final product, **and wherein performing** a gas phase etching step and a gas phase purification step are performed on a surface layer of the quartz glass jig after the annealing but before the cleaning treatment, **and** wherein the gas phase purification step is carried out continuously after the gas phase etching step.

2. (currently amended) A method for producing a quartz glass jig, said method comprising: processing a quartz glass raw material into a desired shape by a treatment including fire working, annealing the quartz glass jig so as to remove stress therein, and cleaning treatment to obtain a final product, **and wherein performing** a gas phase etching step and a gas phase purification step are performed on a surface layer of the quartz jig after the annealing but before the cleaning treatment, **and** wherein the gas phase purification step is carried out simultaneously with the gas phase etching step.

3. (currently amended) A method for producing a quartz glass jig, said method comprising: processing a quartz glass raw material into a desired shape by a treatment including fire working, annealing the quartz glass jig so as to remove stress therein, and cleaning treatment to obtain a the final product, **and wherein performing** a gas phase etching step and a gas

phase purification step **are performed** on a surface layer of the quartz glass jig simultaneously with the annealing, **and** wherein the gas phase purification step is carried out continuously after the gas phase etching step.

4. (currently amended) A method for producing a quartz glass jig, said method comprising: processing a quartz glass raw material into a desired shape by a treatment including fire working, annealing **the quartz glass jig** so as to remove stress **therein**, and cleaning treatment to obtain **a** the final product, **and wherein performing** a gas phase etching step and a gas phase purification step **are performed** on a surface layer of the quartz glass jig simultaneously with the annealing, **and** wherein the gas phase purification step is carried out simultaneously with the gas phase etching step.

5. (Original) A method for producing a quartz glass jig as claimed in Claim 1, wherein the gas phase etching step is performed in a temperature range of from 0 °C to 1300 °C in a gaseous atmosphere containing fluorine (F).

6. (Original) A method for producing a quartz glass jig as claimed in Claim 5, wherein the gaseous atmosphere containing F contains at least one gas selected from the group consisting of  $C_xF_y$ ,  $Cl_xF_y$ ,  $N_xF_y$ ,  $Si_xF_y$ ,  $S_xF_y$  (where,  $10 \geq x \geq 1$  and  $10 \geq y \geq 1$ ),  $CHF_3$ ,  $HF$ , and  $F_2$ .

7. (Original) A method for producing a quartz glass jig as claimed in Claim 1, wherein the gas phase purification step comprises performing high temperature heat treatment in a temperature range of from 800 to 1300 °C in a gaseous atmosphere containing Cl.

8. (Original) A method for producing a quartz glass jig as claimed in Claim 7, wherein the gaseous atmosphere containing Cl is HCl, Cl<sub>2</sub>, or a combination of HCl and Cl<sub>2</sub>.

9. (Original) A method for producing a quartz glass jig as claimed in Claim 5, wherein the gaseous atmosphere containing F further includes a gas containing H.

10. (Canceled)

11. (Canceled)

12. (Original) A method for producing a quartz glass jig as claimed in Claim 2, wherein the gas phase etching step is performed in a temperature range of from 0 °C to 1300 °C in a gaseous atmosphere containing fluorine (F).

13. (Original) A method for producing a quartz glass jig as claimed in Claim 12, wherein the gaseous atmosphere containing F contains at least one gas selected from the group consisting of C<sub>x</sub>F<sub>y</sub>, Cl<sub>x</sub>F<sub>y</sub>, N<sub>x</sub>F<sub>y</sub>, Si<sub>x</sub>F<sub>y</sub>, S<sub>x</sub>F<sub>y</sub> (where,  $10 \geq x \geq 1$  and  $10 \geq y \geq 1$ ), CHF<sub>3</sub>, HF, and F<sub>2</sub>.

14. (Original) A method for producing a quartz glass jig as claimed in Claim 2, wherein the gas phase purification step comprises performing high temperature heat treatment in a temperature range of from 800 to 1300 °C in a gaseous atmosphere containing Cl.

15. (Original) A method for producing a quartz glass jig as claimed in Claim 14, wherein the gaseous atmosphere containing Cl is HCl, Cl<sub>2</sub>, or a combination of HCl and Cl<sub>2</sub>.

16. (Original) A method for producing a quartz glass jig as claimed in Claim 12, wherein the gaseous atmosphere containing F further includes a gas containing H.

17. (Original) A method for producing a quartz glass jig as claimed in Claim 3, wherein the gas phase etching step is performed in a temperature range of from 0 °C to 1300 °C in a gaseous atmosphere containing fluorine (F).

18. (Original) A method for producing a quartz glass jig as claimed in Claim 17, wherein the gaseous atmosphere containing F contains at least one gas selected from the group consisting of C<sub>x</sub>F<sub>y</sub>, Cl<sub>x</sub>F<sub>y</sub>, N<sub>x</sub>F<sub>y</sub>, Si<sub>x</sub>F<sub>y</sub>, S<sub>x</sub>F<sub>y</sub> (where, 10 ≥ x ≥ 1 and 10 ≥ y ≥ 1), CHF<sub>3</sub>, HF, and F<sub>2</sub>.

19. (Original) A method for producing a quartz glass jig as claimed in Claim 3, wherein the gas phase purification step comprises performing high temperature heat treatment in a temperature range of from 800 to 1300 °C in a gaseous atmosphere containing Cl.

20. (Original) A method for producing a quartz glass jig as claimed in Claim 19, wherein the gaseous atmosphere containing Cl is HCl, Cl<sub>2</sub>, or a combination of HCl and Cl<sub>2</sub>.

21. (Original) A method for producing a quartz glass jig as claimed in Claim 17, wherein the gaseous atmosphere containing F further includes a gas containing H.

22. (Original) A method for producing a quartz glass jig as claimed in Claim 4, wherein the gas phase etching step is performed in a temperature range of from 0 °C to 1300 °C in a gaseous atmosphere containing fluorine (F).

23. (Original) A method for producing a quartz glass jig as claimed in Claim 22, wherein the gaseous atmosphere containing F contains at least one gas selected from the group consisting of  $C_xF_y$ ,  $Cl_xF_y$ ,  $N_xF_y$ ,  $Si_xF_y$ ,  $S_xF_y$  (where,  $10 \geq x \geq 1$  and  $10 \geq y \geq 1$ ),  $CHF_3$ ,  $HF$ , and  $F_2$ .

24. (Original) A method for producing a quartz glass jig as claimed in Claim 4, wherein the gas phase purification step comprises performing high temperature heat treatment in a temperature range of from 800 to 1300 °C in a gaseous atmosphere containing Cl.

25. (Original) A method for producing a quartz glass jig as claimed in Claim 24, wherein the gaseous atmosphere containing Cl is HCl,  $Cl_2$ , or a combination of HCl and  $Cl_2$ .

26. (Original) A method for producing a quartz glass jig as claimed in Claim 17, wherein the gaseous atmosphere containing F further includes a gas containing H.